TECHNICAL EXHIBIT 1

EQUIPMENT MAINTENANCE AND REPAIR

GENERAL

1. SCOPE:

a. This specification covers the general requirements for maintenance and repair.

2. APPLICABLE PUBLICATIONS: Refer to American National Standards Institute (ANSI) Safety Code for Elevators, Escalators, and Moving Walks; American Society for Testing and Materials (ASTM); American Welding Society, Inc. (AWS), National Electrical Manufacturers Association (NEMA), Industrial Controls and Systems (ICS), and the National Fire Protection Association (NFPA).

3. MATERIALS AND EQUIPMENT: Materials and equipment shall comply with the respective publications and requirements specified below.

a. Corrosion resisting steel. ASTM A167, Type 302 or 304, polished one side with number 4 finish. After fabrication, all exposed services shall be cleaned, refinished, and scratches, pits, or other blemishes removed by polishing, or grinding as required.

b. Structural Steel. ASTM A36.

c. Traveling Cables. NFPA 70.

d. Uncoated Sheet Steel. ASTM A569, condition and finish to suit the application. Finished surfaces of cars, panels, doors, and frames shall be formed from dull-finished, cold-rolled, stretcher-leveled, and resquared sheets except where corrosion resisting steel is specified.

4. MAINTENANCE AND REPAIR: The Contractor shall furnish complete maintenance and repair of equipment as per the Bid Schedule in compliance with the latest editions of the National, State and Local, Electrical, Fire, Safety and Health codes. The phrase, “latest editions” refers to the latest editions of these codes as of the date of this solicitation opening (refer to paragraph 7.3. of the Performance Work Statement).

a. Car Operations: Elevator cars shall be operated to detect any improper operation of the car doors, hoist way doors, acceleration, leveling accuracy of floor stops and the action of the machine brake. Proper operation of the retractable door edges shall be checked. Car station and call buttons shall be checked, any damaged switches, burnt out lamps or broken buttons shall be repaired. Burnt out lamps lighting the buttons shall be replaced.

b. Controller and Selector Panels: The operation of all control relays, contactors and other devices shall be checked for proper sequence. Where contacts are exposed to excessive current, circuit shall be checked, over-current corrected and burned contacts replaced. Magnet coils, relays and contactors shall be visually inspected devoting special attention to the coils of relays that are continuously energized. Coils that have brittle insulation or cracked binders shall be replaced. The floor selector shall be inspected and checked, adjusted as necessary, and lightly lubricated.

c. Brakes: Brake plunger shall be examined and adjusted to ensure it is free and operates to the full extent of its travel. Clearance between the brake shoes and the drum shall b e maintained at a minimum. Brake contacts shall be examined for wear and adjusted or repaired. Brake drum pulley shall be cleaned. Loose materials shall be prevented from catching between the drum and brake shoes.

d. Technical Cleaning: Hoisting machine and generator shall be wiped down. Excessive heat, unusual noises and any oil leakage shall be corrected. Copper or carbon dust on the control and relay panels shall be brushed off (also see paragraph 7.10 of the Performance Work Statement).

e. Motors, Regulators and Generators: Brushes shall be maintained so they are free to move in their holders and make good contact with the commutator. Brush springs shall be checked, and worn brushes shall be replaced with new brushes of the same size and grade. Carbon dust shall be cleaned from the brush holders and insulators. Commutator shall be wiped off, **Do Not Sandpaper.** If the carbon dust can not be entirely removed from the commutator by wiping, the undercut slots shall be cleaned. Shorted conditions between the commutator bars shall be corrected. Commutator shall be maintained in an oil free condition.

f. Governors: With the power removed from the controls, the governor shall be tripped by hand to verify that parts of the mechanism operate freely. Pins, bolts and anchors shall be checked and tightened and broken items replaced. Over-speed safety switch contacts shall be examined, cleaned, checked for proper operation, and adjusted, or replaced if necessary. Governor shaft and bearings shall be lubricated and adjusted and worn parts replaced.

g. Car Door Operations: Door operator motors shall be examined and cleaned. Moving parts connected to the door operators shall be examined and cleaned, loose screws or bolts tightened, and worn pins and bearings replaced. Door gibs shall be removed and cleaned if they bind in the threshold groove. The threshold also shall be cleaned if binding occurs.

h. Retiring Cam: Retiring cam shall be examined for worn pins and bearings, loose bolts, and missing lock rings. Clearances between the cam and door switch lever rollers shall be checked and adjusted, if necessary, for proper operation.

i. Wire Ropes and Fastenings: Steel and iron wire ropes and fastenings on the car, counterweight and governor shall be examined. Ropes that have broken wires will require close examination. The Contracting Officer or the Contracting Officer's Representative shall be notified within twenty-four (24) hours of unsafe conditions found, and of adjustments made. The tension of hoist and compensating ropes shall be checked, and adjusted if necessary, to ensure that they are of the same tension.

j. Traveling Cables: Traveling cables shall be examined for evidence of wear due to rubbing against any operating beams, walls or the car platform. Worn spots shall be covered with electrical tape to prevent further damage. Remedial action shall be taken to avoid striking the pit floor. Ensure that the loop travels through the hoistway without any twisting motion or any interference.

k. Counterweights and Compensators: Clearance of the counterweight at the buffer shall be inspected and adjusted with the car stopped at the top floor landing. Clearance between the compensator and the pit floor shall be checked to determine if the ropes on either the counterweight or the compensator need shortening. Compensating sheave and sheave bearings shall be examined and adjusted.

l. Hoisting Machine: Remedial action shall be taken if cutting of the drive sheave or secondary sheave grooves is taking place. The hoisting ropes shall be lightly lubricated and other corrective action taken. The prescribed oil level shall be maintained in the gear housing.

m. Door Interlocks: Each hoistway door shall be tested by pulling from the corridor side while the car is running to verify that the doors are securely locked and that the car does not stop because of an interrupted door contact circuit. The door contact shall be tested at the control panel for grounds and high resistance shorts using an ohmmeter. Door interlocks shall be inspected to verify that there are no loose parts. Door interlock components shall be adjusted or replaced as necessary for proper operation.

n. Guide Shoes and Roller Guides: Operation of the guide shoes or roller guides shall be observed. Worn nylon or molydisulphide gibs and any worn or eccentric wheels shall be replaced.

o. Retractable Safety Door Edge: Moving parts of retractable door edges shall be examined for loose screws, bolts, worn pins, bearings, cams and rollers. The trail cable shall be inspected for wear and adjusted to prevent rubbing on any other parts when the door is operated. Operation of the door edge contacts and switches shall be checked and adjusted or these items replaced where necessary for proper operation.

p. Hydraulic Oil Holding Tanks: The car shall be operated up and down and the oil level observed at each extreme on the gauge. Oil shall be added when required. Replacement oil shall comply with the Original Equipment Manufacturers specifications.

q. Cylinder Packing Gland: The cylinder packing gland shall be examined for leakage. Packing shall be replaced when leakage can not be corrected by tightening the gland.

r. Oil Collection Container: The oil collection container shall be emptied during each maintenance inspection to prevent oil from leaking into the pit.

s. Hydraulic Pump Units: The pump and motor shall be wiped down. Bearing surfaces shall be examined for excessive heat and unusual noises while the unit is running and adjusted or repaired. Oil leakage that develops at the pump and hiking system shall be corrected.

t. Controller: Each contactor and relay shall be operated by hand with the main line switch disconnected. Control relays shall be adjusted to ensure wiping action across the contacts. Loose rivets shall be replaced and loose screws tightened; air gap shall be adjusted, if excessive, and relay movement checked for friction. The hinge pins and stop plates shall be inspected and replaced where worn. Shunts shall be inspected and replaced where frayed or indications are that the shunts may soon break down. Wire terminals shall be checked for tightness, including those connected to overload relays. Nuts and bolts which hold resistance grids shall be tightened. Contacts of relays which seldom operate such as overload relays, reverse phase relays, and protective relays shall be cleaned and checked for proper operation.

u. Slow Down and Limit Switches: Covers shall be removed, switch boxes cleaned, contacts examined, cleaned and adjusted, when necessary. Moving parts shall be maintained free from friction and noisy operation. Slow down switches shall be set by operating the car to a terminal landing. If slow down control is insufficient and the car goes past the terminal landing far enough to create a hazard to passengers, corrective adjustments shall be made.

v. Hoistway Door Equipment: Grease and dirt shall be cleaned from the hanger tracks and tracks shall be lubricated. Thrust rollers shall be checked and adjusted, if necessary. Grease shall not be applied to the door interlock bridge contacts. Hanger fastenings shall be examined to verify that all parts are secure. Door gibs shall be checked and all worn pins replaced. Door arms shall be checked for loose pins, bolts, and worn or cracked casings.

w. Hoistway: Hoistway equipment such as secondary sheaves and beams, car and counterweight guide rails and brackets, limit switches and their brackets, supporting beams, counterweight, car top, car sides and safety mechanism shall be cleaned and any dirt on the car bottom or the pit floor removed Loose rail/bracket bolts shall be tightened. Ropes and rope fastenings and the hoistway conduit shall be adjusted as cleaning operations progress down the hoistway. Car sling shall be checked for loose bolts, car steadying plates and brackets. Rail lubricator pots and wicks shall be cleaned and filled.

x. Oil Buffers: Oil buffer plungers shall be cleaned and the oil level maintained as measured by the attached gauge. Spring-return plunger shall be tested and adjusted to return to its top position when released. If the buffer is equipped with a switch, operation shall be checked and contacts cleaned.

y. Machine Break: Brake plunger shall be removed, plunger and sleeve cleaned with solvent, and if surface is rough, cleaned with emery cloth. If the brake sleeve is worn to the extent that the brake plunger rubs on the coil housing, the sleeve shall be replaced. Rivets holding the linings to the brake shoes shall be tightened or

replaced and are not to run on the brake drum. The ball sockets or pins for the brake shoes shall be cleaned and lubricated when reinstalled.

z. Safety Tests: The Contractor shall provide a certified independent elevator safety inspector approved by the Contracting Officer during the performance of the safety inspections, and after major repairs. Under normal conditions, the governor will be hand tripped with no load to set the safeties; however, if the hoisting ropes or the governor ropes are replaced after an inspection, a full load safety test will be required and the Contractor shall provide the test weights and handling personnel. Any maintenance deficiencies noted during the safety inspection and tests shall be corrected by the Contractor prior to certification and at no additional cost to the Government.

(End of Technical Exhibit 1)